Summary of Fishery Surveys
South Harper Lake, Taylor County, 2014-2015

WDNR's Fisheries Management Team from Park Falls completed fyke netting and electrofishing surveys in 2014 and 2015 to assess the status of important fish populations in South Harper Lake. Fyke netting in October targeted black crappies. Fyke nets deployed again shortly after the 2015 spring thaw targeted walleye, northern pike, and yellow perch. A late-spring electrofishing survey documented the abundance and size structure of largemouth bass and bluegill populations. Quality, preferred, and memorable sizes referenced in this summary are based on standard proportions of world record lengths developed for each species by the American Fisheries Society. The designation of "Keeper size" is based on known angler behavior.

Survey Effort

On October 6th, 2014 with water temperatures 53-54°F, we set three fyke nets for two nights (6 net-nights) to intercept fall movements of black crappies. On April 8th, 2015 we set three fyke nets at locations chosen to intercept early-spring spawning species and fished them for six nights (18 net-nights) when water temperature ranged from 39-47°F. Fall and spring nets were fished two nights and tended on alternate days. Comparing measured water temperature with the optimal spawning temperature range of the targeted species, our spring fyke netting was well timed to represent walleye and yellow perch population status. With water temperatures at 68°F our May 28th electrofishing survey should have coincided with spawning activities of largemouth bass and bluegills. We sampled the entire 1.87 miles of shoreline in 0.98 hours, including 0.51 miles sub-sampled for all species in 0.30 hours.

Habitat Characteristics

South Harper Lake is an 80-acre seepage lake located about 3 miles north of Rib Lake, WI. The average depth is 11 feet, and maximum depth is 32 feet. The water is moderately clear, and the substrate is 50% sand, 40% gravel, and 10% rock, supporting a moderate density of submergent and emergent vegetation. An intermittent outlet leads to North Harper Lake. The shoreland is 16% bog, and the rest is mixed hardwoods and pine. The Township of Rib Lake maintains a public boat landing on the north shore off Rustic Road 1.

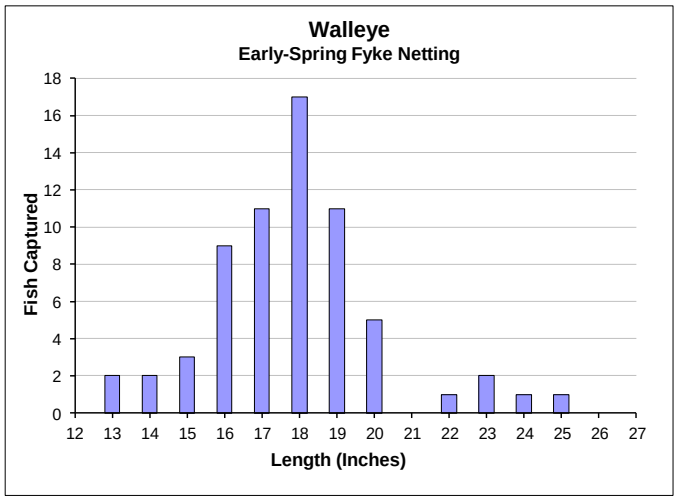
Summary of Results

We captured 11 species during our netting and electrofishing surveys. The principal predator species were largemouth bass and walleye with bluegills as their main forage. We had very low capture rates of yellow perch and black crappies, suggesting those populations were present in low abundance.

Walleye

Early Spring Fyke Nets

Captured 5.5 per net-night ≥ 10"	
Quality Size ≥ 15"	94%
Preferred Size ≥ 20"	15%
Memorable Size ≥ 25"	2%

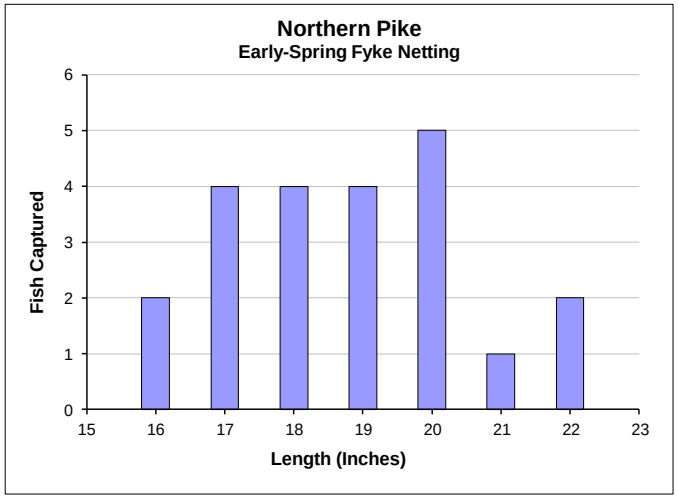


We estimated walleye population density to be about 1 adult per acre, based on the ratio of fin-clipped to newly-captured fish after three fyke net lifts (Schnabel method). Walleye density of 1 per acre is typical of populations in the ceded territory maintained primarily through stocking. The Rib Lake Area Fish & Game Association raises walleyes and stocks them as large fingerlings annually to offer bonus angling opportunity and to help control panfish abundance in South Harper Lake and 13 other small lakes nearby. The size structure of the walleye population is very impressive with 94% of our sample 15 inches or greater. Current Walleye population abundance may be close to South Harper Lake's carrying capacity which is limited by a relatively low amount of habitat and available forage in this small lake. We did not find many white suckers or yellow perch, which are the preferred prey of walleyes.

Northern Pike

Early Spring Fyke Nets

Captured 1.4 per net-night ≥ 14"	
Quality Size ≥ 21"	14%
Preferred Size ≥ 28"	0%
Memorable Size ≥ 34"	0%

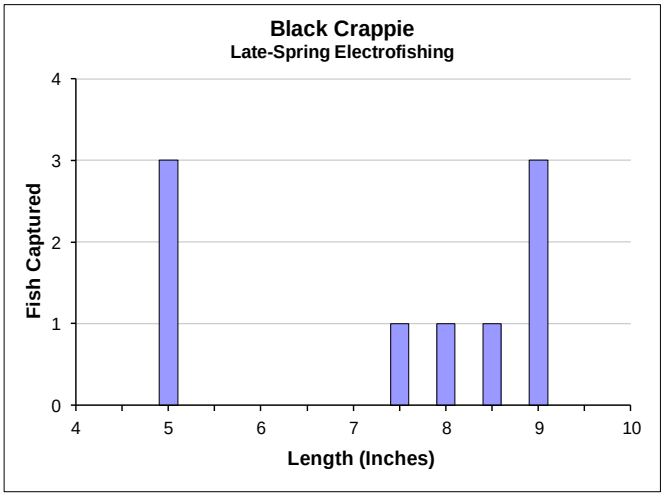


Our spring fyke netting indicated a northern pike population in low abundance with poor size structure. Number and size of northern pike in our 2015 survey were very similar to our last spring netting survey in 1995 when a capture rate of 1.8 pike per net-night was recorded. Northern pike are serving as a complementary predator to largemouth bass and walleyes, but pike may be limited in South Harper by the availability of preferred habitat and forage.

Black Crappie

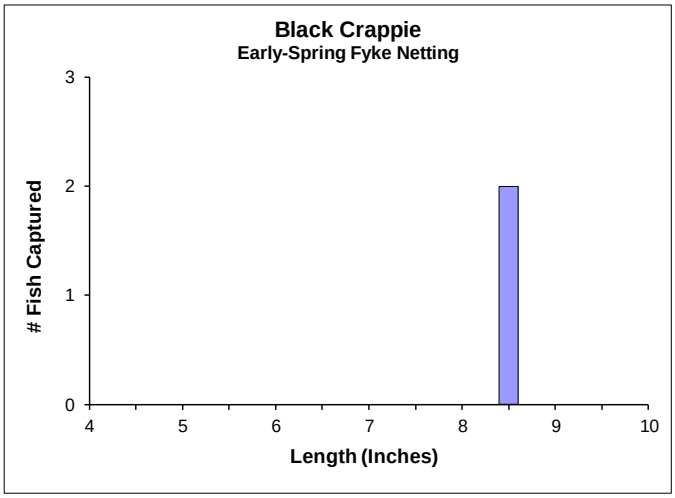
Late Spring Electrofishing

Captured 18 per mile or 30 per hour ≥ 5"	
Quality Size ≥ 8"	56%
Preferred Size ≥ 10"	0%
Memorable Size ≥ 12"	0%



Early Spring Fyke Nets

Captured 0.1 per net-night ≥ 5"	
Quality Size ≥ 8"	100%
Preferred Size ≥ 10"	0%
Memorable Size ≥ 12"	0%

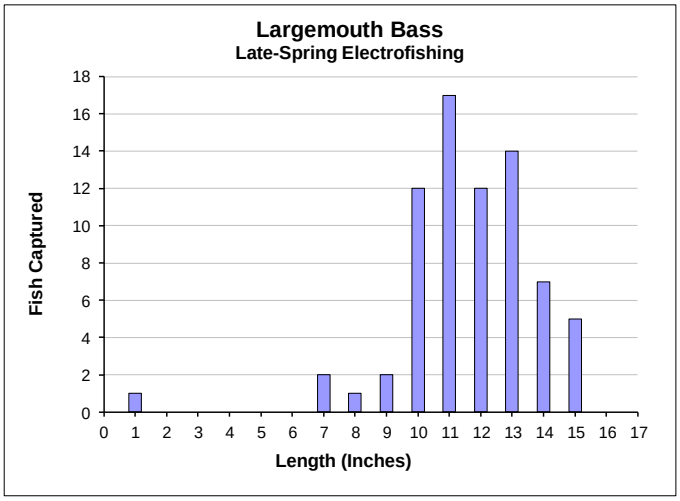


We captured very few black crappies during our 2014-2015 surveys. During our fall fyke netting survey (which targets crappies) we did not capture any crappies. Early spring netting captured only 2 black crappies, and our late spring electrofishing circuit, which may have coincided with the tail end of the crappie spawning period, captured 9 crappies. Size structure was poor with no fish longer than 10 inches. Excessive predation by walleye and largemouth bass on young crappie may be repressing crappie recruitment and not allowing a desirable crappie density to develop.

Largemouth Bass

Late Spring Electrofishing

Captured 37 per mile or 71 per hour ≥ 8"	
Quality Size ≥ 12"	54%
Legal Size ≥ 14"	17%
Preferred Size ≥ 15"	7%

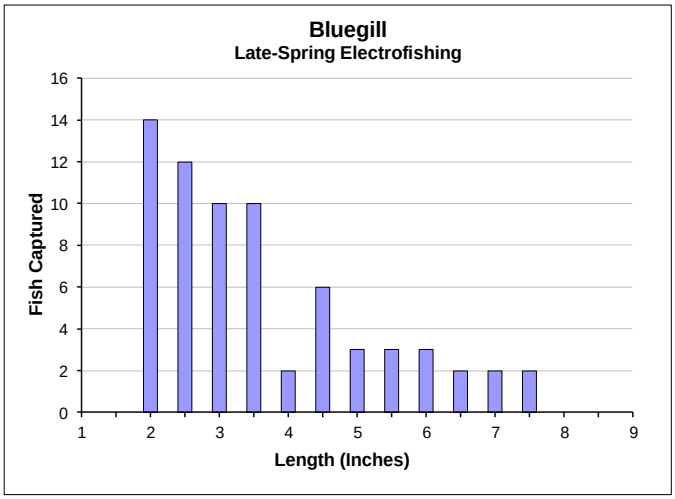


Largemouth bass are the most abundant predator in South Harper Lake. Our electrofishing capture rate of 37 per mile is indicative of moderately high population abundance. Size structure was fair with 17% of the largemouth captured attaining legal size (14 inches or greater).

Bluegill

Late Spring Electrofishing

Captured 84 per mile or 143 per hour ≥ 3"	
Quality Size ≥ 6"	21%
Keeper Size ≥ 7"	9%
Preferred Size ≥ 8"	0%



Our capture rates of bluegill during our netting and electrofishing surveys indicate low to moderate population abundance. Yet, the bluegill size structure was poor with the majority in the 2- to 4-inch range and none longer than 8 inches. Heavy predation by walleyes and abundant largemouth bass may be limiting bluegill recruitment as they seem to be the main food of predators in this lake. We captured only 6 bluegills in our fall and spring netting surveys, further supporting our suspicions of low bluegill recruitment and abundance. We did not analyze bluegill growth rate, and we cannot explain why a population at a low to moderate level of abundance has such a low proportion of keeper-size fish. Perhaps anglers are selectively harvesting the largest individuals from the population faster than they can be replaced.

Survey data collected and analyzed by: Evan Sniadajewski, Jeanette Wendler, and Jeff Scheirer—WDNR Fishery Team, Park Falls.

Written by: Chad Leanna—LTE Fisheries Technician, December 15, 2015.

Reviewed and edited by: Jeff Scheirer, Fishery Biologist and Max Wolter, acting Hayward Field Unit Supervisor, December 22, 2015.

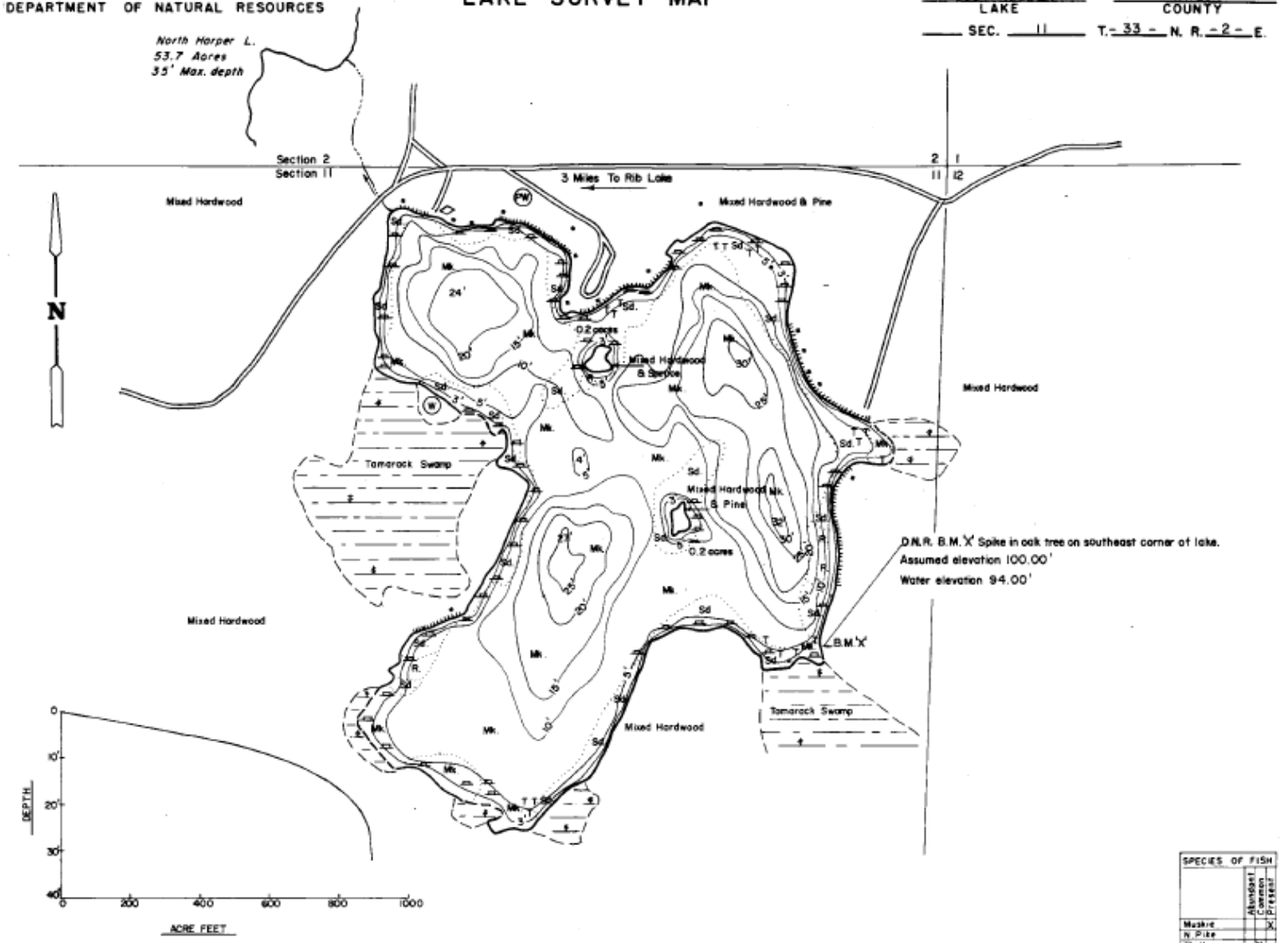
Approved for web posting by: Mike Vogelsang, Northern Administrative District Supervisor, December 22, 2015.

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

LAKE SURVEY MAP

SOUTH HARPER LAKE — TAYLOR COUNTY

SEC. 11 T. 33 N. R. 2 E.



EQUIPMENT RECORDING SONAR MAPPED AUGUST (MO.) 1965 (YR.)

WATER ELEV. 94.00'

TOPOGRAPHIC SYMBOLS

- Brush
- Partially wooded
- Wooded
- Cleared
- Pastured
- Agricultural
- B.M. Bench Mark
- Dwelling
- Resort
- Steep slope
- Indefinite shoreline
- Marsh
- Spring
- Intermittent stream
- Permanent inlet
- Permanent outlet
- Dam

LAKE BOTTOM SYMBOLS

- P. Peat
- Mk. Muck
- C. Clay
- M. Marl
- Sd. Sand
- St. Silt
- Gr. Gravel
- R. Rubble
- Br. Bedrock
- T Submergent vegetation
- Emergent vegetation
- Floating vegetation
- Stumps & Snags

300' 0 300' 600' 900' 1200' 1500'

SCALE

◇ Access ◆ Access with Parking ◆ Boat Livery

Field work by: G.Miller, M.Perkins, L.Sother Drawn by: J.Roth

SPECIES OF FISH	Abundant	Common	Present
Muskie			X
N. Pike			
Walleye		X	
L.M. Bass			X
S.M. Bass			
Panfish		X	
Trout			

80.1 ACRES WITH ISLANDS

AREA 79.7 ACRES

UNDER 3FT. 7.6 %

OVER 20FT. 13.9 %

VOLUME 894.6 ACRE FT.

TOTAL ALK. 13 P.P.M.

SHORELINE 2.0 MILES

MAX. DEPTH 32 FEET